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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/637,199	08/08/2003	Rongchung Tyan	OP 03/108	4100
	7590	04/25/2005	EXAMINER	
Robert Nick PO Box 3156 Laguna Hills, CA 92654			LEPISTO, RYAN A	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 04/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/637,199

Applicant(s)

TYAN ET AL.

Examiner

Ryan Lepisto

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) 42-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-41, drawn to a bi-directional planar light circuit with wavelength selective filter, classified in class 385, subclass 37.
 - II. Claims 42-52, drawn to a beveled planar light circuit structure, classified in class 385, subclass 60The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are not capable of use together since group II is only drawn to planar light circuit with a fiber held in a beveled ferrule coupled to a laser diode in another beveled structure while group I is a bi-directional transceiver that separates two wavelengths from one another using a filter. The invention of group I again, functions as a wavelength splitter while the invention of group II functions as a coupler.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Robert Nick on 30 March 2005 a provisional election was made without traverse to prosecute the invention of group I, claims 1-41. Affirmation of this election must be made by applicant in replying to this Office action. Claims 42-52 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 34 and 36.

3. The drawings are objected to because reference numeral 56 in Fig. 5(a) does not point to anything. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.

4. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities: "WSM" on page 5, 6th paragraph should be replaced with – WSF –. Appropriate correction is required.

Claim Objections

6. **Claims 5-6 and 26** are objected to because of the following informalities: – and – or another proper word should be inserted between "output end" and "said WSF" and

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– is – or another proper word should be inserted between “WSF” and “placed” in claims 5-6. In claim 26, the word “is” is repeated. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 1-17, 19-21, 24-27 and 33-41** are rejected under 35 U.S.C. 102(b) as being anticipated by **Doneen (US 4,842,357)**. Doneen teaches a bi-directional (column 3 lines 31-35) planar light circuit (PLC) (Figs. 3, 4, 8), made of silica (or glass, column 2 lines 24-25) having modules (Fig. 1, 3) each having four edges for separating optical signals at multiple wavelengths (column 3 lines 46-48) comprising wavelength selective filters (WSFs) (20, 44, 84, 96) (or mirror means) configured (by intrinsic wavelength absorption properties, column 8 lines 42-59) to pass a band of signals (from a laser diode or LED, column 5 lines 41-43 and column 6 lines 46-48 attached to the PLC, Fig. 3, 78) centered at different wavelengths and to reflect a band of signals centered at other wavelengths (column 3 lines 45-48, column 4 lines 11-13, column 5 lines 60-61, column 6 lines 4-6, Fig. 5) placed in energy coupled proximity (near the edges) to an external surface of the PLC (Figs. 1 and 3 show that the filters are on the PLC and are close enough to the edge that they are able to receive a signal from a fiber (14) coming from outside the PLC) using a deposition process (column 8 lines 48-53), internal

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branching waveguides (16, 24, 48, 60, 76, 80, 88, 100, 104) having input and output ends and ports adapted to direct optical signals (for example, column 3 lines 30-34) from an optical fiber (14) in a V-groove (Fig. 8, column 8 lines 37-40) (Fig. 8 also shows that the fiber has an additional ferrule or cladding structure surrounding the core) to and from the WSFs (some waveguides, like 88, have an input end near a WSF while others like 80 have an output end near a WSF and the input port of 16 takes a signal to a WSF while the output port of 104, for example, takes a signal from a WSF to a detector) and a close to normal incidence angle to the filter (the filters are tilted, but the waveguides are normal to an straight axis running through the center of the filters) and signal detectors (90, 102, 106) to receive optical signals (column 5 lines 65-68) that pass through the filters (high extinction wavelength isolation) in energy-coupled proximity to the WSFs (the detectors are able to receive a signal from the WSFs).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 22-23, 28 and 30-32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Doneen in view of the applicant's disclosed prior art.

Doneen teaches the PLC with WSFs with the limitations described above used to reject claims 1-17, 19-21, 24-27 and 34-41.

Doneen does not teach expressly a V-groove structure cut at a 45° angle, an adhesive coating to adhere a glass cover over the fiber, or a silicon glass, near infrared transparent ferrule.

The applicant discloses on page 6 of the specification that the V-grooves devices shown in applicant's Fig. 3 and 4 (which are cut at a 45° angle (Fig. 3) and have an adhesive coating over the fiber (Fig. 4)) are commercially available (line 4) and therefore would have been obvious to a person of ordinary skill in the art at the time of the invention. The applicant further discloses that a silicon or glass substrate, which can be near infrared transparent, is well known in the art (lines 17-18) and therefore would also have been obvious to a person or ordinary skill in the art at the time of the invention.

Doneen and the applicant's admitted prior are analogous art because they are from the same field of endeavor, PLC devices using WSFs and detectors on glass substrates.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use commercially available materials and materials well know in the art and incorporate them in the device as taught by Doneen since these modifications are states as being well known and therefore their incorporation lack inventive step.

The motivation for doing so would have been increase coupling efficiency by decrease coupling loss due to fiber to waveguide couplings.

9. **Claim 29** is rejected under 35 U.S.C. 103(a) as being unpatentable over Doneen in view of **Kuhara et al (US 2003/0210866 A1)** (Kuhara).

Doneen teaches the PLC with WSFs with the limitations described above used to reject claims 1-17, 19-21, 24-27 and 34-41.

Doneen does not teach expressly a detector mounted on the surface of the ferrule.

Kuhara teaches a bi-directional PLC (Fig. 15-16) comprising a fiber (86) surrounding by a cladding or ferrule structure that intersects a WSF (85, paragraph 0102) at a 45° angle wherein a photodiode (89) is mounted via mount (87 and 88) to the fiber ferrule near the coupling region of the fiber and filter.

Doneen and Kuhara are analogous art because they are from the same field of endeavor, optical PLC devices using WSFs to separate wavelengths of a signal to a detector where components are mounted to a substrate.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the PLC of Doneen by placing the detector on the ferrule of the fiber as taught by Kuhara.

The motivation for doing so would have been provide the same functions and some features as those in a similar structure but using branching waveguides (Kuhara, paragraph 0105).

10. **Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over Doneen in view of **Wach (US 6,415,082 B1)**.

Doneen teaches the PLC with WSFs with the limitations described above used to reject claims 1-17, 19-21, 24-27 and 34-41.

Doneen does not teach expressly the internal branching waveguides being tapered.

Wach teaches PLC and filtering device wherein the internal waveguides that are a part of the PLC's substrate (for example, Fig. 21) are tapered (column 5 lines 26-35).

Doneen and Wach are analogous art because they are from the same field of endeavor, optical PLC devices using WSFs to separate wavelengths of a signal to a detector where components are mounted to a substrate.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate tapered waveguides as taught by Wach in the structure as taught by Doneen.

The motivation for doing so would have been to optimize the transfer of optical energy by manipulating the shape of the waveguides, to minimize the divergence of optical energy and to optimally project the signal on the filtering device (column 5 lines 26-35).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references teach PLC devices with similar structural limitations as the applicants: Papuchon et al (US 4,468,085) (also teaches a detector on a ferrule of fibers, Fig. 3), Yamasaki et al (US 4,693,544), Seki et al (US

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4,790,615), Kunikane et al (US 5,005,935), Scifres et al (US 5,088,105), Booth (US 5,098,804), Gustavsson (US 5,191,625), Sugihara et al (US 5,425,118), Kunikane et al (US 5,479,547), Mueller-Fiedler et al (US 5,579,154), Kurata (US 5,633,962), Fukushima et al (US 5,699,187), Kurata et al (US 5,799,120), Kitamura (US 5,825,951), Lemoff et al (US 5,894,535), Shahid (US 5,943,461), Kadoi et al (US 5,949,928), Takahashi et al (US 6,215,917 B1), Seino (US 6,243,516 B1), Toyohara (US 6,304,697 B1), Kinoshita et al (US 2001/0053262 A1), Ido et al (US 6,356,692), Nakanishi et al (US 6,374,021 B1), Goto (US 6,408,121 B1), Duck et al (US 6,438,291 B1), Hashimoto et al (US 6,480,639 B2), Kitamura (US 6,480,647 B1), Nishimura et al (US 6,507,680 B1), Saito et al (US 6,527,454 B1), Takei et al (US 6,535,670 B1), Takano et al (US 2003/0095744 A1), Ukechi et al (US 6,647,184), Kimura (US 6,684,012 B2), Bures et al (US 6,718,076 B2), Kinoshita et al (US 6,744,945 B2), Schimd (US 6,754,403 B1), Kimura (US 6,760,510 B2), Takano et al (US 6,775,439 B2), Takahashi et al (US 6,868,210 B2), Kuhara (US 6,873,767 B2).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Lepisto whose telephone number is (571) 272-1946. The examiner can normally be reached on M-F 7:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ryan Lepisto

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Date: 4/4/05



Frank Font

Supervisory Patent Examiner

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